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CALIFORNIA STATE DEPARTMENT OF PUBLIC HEALTH
WALTER M. DICKIE, M.D., Director

Weekly Bulletin

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*Fluorine With Relation to Teeth**

The responsibility of minute quantities of fluorine in mottling and staining of the teeth is established beyond doubt. Even the severity of the effect has been correlated with the fluorine content of the water supply. For instance, Dr. H. T. Dean, Dental Surgeon, U. S. Public Health Service, summarizes the relationship as follows:

1.0 parts per million. The odds are that the teeth of 1 child in 10 will be damaged, all very mild.

1.7 or 1.8 parts. 1 in 2 affected, all mild or very mild.

2.5 parts. 3 or 4 out of 5 affected and 1 in 4 or 5 moderate or severe.

4 parts. Almost all children affected and 1 in 3 moderate or severe.

The odds increase with higher fluorine content.

At this point, however, caution should be sounded against using fluorine values reported earlier than five years ago. The early test methods did not take into account various substances that interfered with the test and the fluorine values were commonly higher than obtained by present methods of test. A reservation should also be made with respect to evidence presented by Dr. Dean last year that in waters containing not over 2.5 parts per million of fluorine, the dental caries rate in many areas which he has studied is significantly less, in spite of a higher concentration of fluorine. However, this does not necessarily interfere with the evident direct relationship between fluorine and mottled enamel areas.

The primary source of fluorine is in rocks of igneous derivation that are widely distributed in nature. In the erupted molten rocks which have cooled below the surface, the fluorine has been retained as the rock cooled. Waters in long contact with such rock formations dissolve fluorine among other things, but with respect to fluorine, never in excess of 20 parts per million as far as we have ever seen and usually the fluorine concentration is less than 10 parts per million. Sedimentary formations occasionally are found to contain fluorine but this is explained as an infiltration into such formations of deeper seated water which has had previous contact with fluorine-bearing rock.

It follows that hot springs with their higher powers of solution will commonly contain fluorine. Surface streams, on the other hand, seldom contain fluorine in any toxic amount. An exception seems to be in certain streams in the Colorado River Basin flowing off of Pike's Peak. It is not impossible for shallow springs to contain fluorine as illustrated by one of the sources at Maricopa, California, where a dug well, essentially spring-fed, shows a considerable fluorine content, enough to cause mottling of the teeth. The fluorine content is highly variable with the seasons.

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* Part of the Discussion of Dental Care of Children, Health Officers Department, League of California Municipalities, Hotel Oakland, September 18, 1939, by C. G. Gillespie, Chief, Bureau of Sanitary Engineering.

For all practical purposes, however, one should suspect the well waters in the more or less ancient volcanic regions.

Here in California fluorine in hot springs is encountered in the geysers at Calistoga at the foot of Mt. St. Helena, which is of volcanic origin. It is said that another mottled enamel tooth area is in the Lassen region; another is in hot springs near Santa Barbara; also hot springs on the east side of the Sierra Nevadas near Mono Lake; Keough Hot Springs near Bishop; another area is Murrieta Hot Springs; also Agua Caliente Hot Springs. At Elsinore the fluorine content is marked and this water, though essentially a well water, is nevertheless warm. Fluorine containing well waters are encountered to a limited extent in the Coast Range between Maricopa and Lompoc. To slight extent fluorine waters are encountered in the Sierra Madre Mountains near Los Angeles but the amount is seemingly not high enough to represent a problem. Fluorine in well waters in California is a desert problem, particularly in the Colorado Desert between Oasis and Parker and again a considerable area at Twenty-nine Palms. Also in the Mojave Desert in the vicinity of Death Valley and Death Valley Junction where the underground waters originate in southwestern Nevada. In the Twenty-nine Palms area there are approximately 100 wells, all of which show toxic amounts of fluorine which increase as the water proceeds downstream underground. Altogether the problem may come home to perhaps 3000 or so people in California.

Progress in escaping the fluorine is not pronounced. Three general steps may be considered:

(1) Finding a source or a well that is low in fluorine.

(2) Hauling in drinking water and culinary water from distant sources, or using bottled water.

(3) Removal of fluorine from the water.

Wells in igneous formations are apt to be variable in fluorine content because of the shattered character of rock in such regions and the effect of dykes in prolonging the contact of water with the rock. Therefore, a search may show that certain wells in a fluorine area and certain depths are sufficiently free of fluorine as to represent a tangible improvement. In the Twenty-nine Palms area there were three or four wells at the upper edge of the district which though they still had 1.5 parts per million of fluorine were a great deal better than the run of wells in the district which had from 5 to 10 or 12 parts per million of fluorine. At Shoshone, near Death Valley, analyses revealed an unused well that was acceptable and a substitute supply was gotten from it. In the Twenty-nine Palms area the school trustees arranged to haul the water for drinking purposes at the school and some of the families have taken to buying bottled water.

Removal of fluorine from water is practicable for drinking and culinary water but is not much practiced. We have experimented with a household filter containing a very pure tri-calcium phosphate. Removals have been fully adequate in a large number of waters experimented with. However, for lack of an analytical control to show when the filter needs recharging and because of the intense warming up of the water in the unit in these desert climates no one has adopted the filter for use. On the other hand, there is no doubt it could be made workable, even under these conditions.

Freezing of fluorine water tends to freeze the fluorine into the core along with other salts and providing the core is removed and only clear ice used this, too, represents a substantial improvement. Distillation of course would completely remove fluorine. None of these measures, however, is particularly cheap but when applied only to the drinking water the bill is small and would seem to justify the ends of having teeth that are not disfigured by mottling.

Fortunately for remedial measures in conection with the water supply fluorine is a thing that seems only to concern the very young. In fact it seems evident that fluorosis is contracted in early childhood while the teeth are still in the soft formative stage below the gums. It may be that it is contracted, chiefly, in the prenatal state.

MISLABELED PERFUMES

A report was received by the Bureau of Food and Drug Inspection that empty imported perfume bottles, of the most expensive varieties, were being collected in Los Angeles from various department and drug stores, refilled with cheaper imitations or dilutions of original brands and sold at low prices in San Francisco to innocent purchasers as smuggled, duty-free products. Upon inspection of the premises occupied by two men handling these imitation perfumes, over 50 large bottles of expensive brands valued at over $1,000 were seized and destroyed. Confessions were obtained from the men to the effect that they were responsible for the adulteration and misbranding of the perfumes and they agreed to leave the state within forty-eight hours. As perfumes do not come within the scope of the California Pure Foods or Pure Drugs Act, action in this case would fall under the False Advertising Act, but the department considered the confiscation of the perfume, together with the written confession of wrong-doing as sufficient punishment.

QUALIFICATION STANDARDS FOR PUBLIC HEALTH WORKERS

(Continued from last issue)

And then, too, there is the all too prevalent idea that any doctor, being skilled in human ills, must needs be qualified to officiate as a director of public health services. Yet none would think of placing themselves in the hands of a dermatologist if in need of abdominal surgery, or of going to an oto-laryngologist for relief of club foot. Public health service is a specialty just as much as the other specialties of medicine; and if a community wishes good health service, it must place itself in the hands of one specially trained in that service, as well as in medicine.

Similar comparisons can be made for the principal divisions of health service—sanitary engineering, milk control, public health nursing, and etc. Engineering is just as highly specialized as medicine—no one thinks of employing a skillful house architect to design a bridge, or a steamship or a water purification plant. The best registered nurse can not be expected to be even reasonably proficient in public health nursing, and the pride of the police force can not be expected to be at the same time a proficient sanitary inspector. One might as well hire a good cook to make the new frock! Why should not sound judgment be used in the choice of public servants—then watch public health services go places, even with the same laws and the same total funds now variously available. Trained personnel constitute the keystone of the public health arch while skillful and judicious planning are the design and the mortar of that arch.

Now if there be any of us who think we really are good—with or without benefit of academic public health training—let us frankly take our own measure against modern yardsticks of proficiency. One of the most effective deflators of public health ego is the new Appraisal Form for Local Health Work (1938) recently prepared and issued by the American Public Health Association. If we still think we are sufficiently good—after frankly and impartially stacking ourselves and our departments' accomplishments up against that excellent yardstick—well, we're hopeless, then!

I recommend the self-application of that yardstick regularly each year to each health service—a sort of "annual physical examination" of the work; the experience will be startling and constructively illuminating—and well worth the effort!

DISEASES REPORTABLE IN CALIFORNIA

REPORTABLE ONLY

Anthrax
Beriberi
Botulism
Chancroid
Coccidioidal Granuloma
Dengue*
Fluke Infection
Food Poisoning
Glanders†
Hookworm
Jaundice (Infectious)
Lymphogranuloma Inguinale
Malaria*
Pellagra
Pneumonia (Lobar)
Relapsing Fever
Rocky Mountain Spotted Fever
Septic Sore Throat
Tetanus
Trichinosis
Tularemia
Undulant Fever

ISOLATION OF PATIENT

Chickenpox
Dysentery (Amoebic)
Dysentery (Bacillary)
Erysipelas
German Measles
Gonococcus Infection
Influenza
Measles
Mumps
Ophthalmia Neonatorum
Psittacosis
Rabies (Animal)
Rabies (Human)
Syphilis
Trachoma
Tuberculosis
Whooping Cough

QUARANTINABLE

Cholera†
Diphtheria
Encephalitis (Epidemic)
Leprosy
Meningitis (Epidemic)
Plague†
Acute Anterior Poliomyelitis
Scarlet Fever
Smallpox
Typhoid and Paratyphoid Fever
Typhus Fever
Yellow Fever†

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* Patients should be kept in mosquito-free room.

† Cases to be reported to State Department of Public Health by telephone or telegraph and special instructions will be issued.

MARINE DAMAGED FOOD PRODUCTS SALVAGED

In the past several months much merchandise has been quarantined due to marine or fire damage. Considerable time and attention in supervising the sorting and disposition of this material by our inspectors has been necessary, but the bulk of the goods is being cleaned up and disposed of satisfactorily. Included in these lots of damaged material being reconditioned are 3400 cases of drugs, 42 bags of starch, 1050 cases of canned shrimp, 1912 cases of shortening and lard, 166 drums of compound, 120 bags of phosphate, 50 cases of macaroni, 500 sacks of flour, 80 cases canned fruit, 1452 sacks rice, and 943 cases canned salmon.

MORBIDITY

Complete Reports for Following Diseases for Week Ending September 30, 1939

Chickenpox

57 cases: Alameda County 1, Alameda 2, Albany 1, Berkeley 1, Oakland 4, Concord 2, Fresno County 1, Arcata 1, Eureka 1, Kings County 3, Los Angeles County 1, Glendale 1, Los Angeles 2, San Marino 1, Madera County 1, Chowchilla 1, San Rafael 1, Orange County 4, Santa Ana 2, Plumas County 1, Sacramento 1, San Diego 1, San Francisco 17, Santa Barbara 1, Santa Clara County 1, Siskiyou County 2, Stanislaus County 2.

Diphtheria

12 cases: Oakland 1, Los Angeles 4, San Bernardino County 2, San Diego 2, San Francisco 1, Ventura County 1, Fillmore 1.

German Measles

11 cases: Alameda 1, Albany 3, Oakland 1, Kings County 1, Corcoran 1, Los Angeles County 1, Montebello 1, Exeter 2.

Influenza

5 cases: Los Angeles County 3, Glendale 1, Los Angeles 1.

Malaria

23 cases: Fresno County 4, Kern County 4, Napa County 1, Sacramento County 1, Shasta County 1, Modesto 1, Sutter County 5, Winters 1, Woodland 1, Yuba County 3, California 1.*

Measles

86 cases: Berkeley 2, Oakland 1, Contra Costa County 2, Fresno 1, Los Angeles County 2, Compton 1, Glendale 2, Glendora 1, Long Beach 2, Los Angeles 7, Pasadena 1, Redondo 1, South Pasadena 1, Anaheim 2, Corona 1, Perris 1, Ontario 1, San Diego County 16, San Diego 13, San Francisco 2, Lodi 1, Stockton 4, Redwood City 1, Santa Maria 1, Gilroy 1, Stanislaus County 12, Tulare County 1, Exeter 2, Ventura County 3.

Mumps

139 cases: Alameda County 5, Berkeley 4, Oakland 2, Calaveras County 1, Fresno County 3, Fresno 6, Eureka 1, Kern County 12, Delano 1, Los Angeles County 7, Glendale 1, Long Beach 5, Los Angeles 11, Pasadena 2, Pomona 2, Santa Monica 1, South Pasadena 1, Monterey County 1, La Habra 1, Banning 1, Riverside 1, Sacramento 5, San Bernardino County 1, San Diego 1, San Francisco 14, Stockton 2, San Luis Obispo County 5, San Luis Obispo 1, San Mateo 1, Atherton 1, Santa Maria 1, Santa Clara County 1, Palo Alto 10, San Jose 1, Sunnyvale 4, Shasta County 3, Sonoma County 1, Stanislaus County 1, Modesto 3, Oakdale 3, Tulare County 3, Tuolumne County 1, Ventura 1, Yolo County 3, Davis 1, Woodland 1, California 1.*

Pneumonia (Lobar)

25 cases: Alameda County 1, Oakland 2, Eldorado County 1, Los Angeles County 2, Hermosa 1, Inglewood 1, Los Angeles 4, Riverside County 1, Riverside 1, Sacramento County 1, Sacramento 2, San Diego 1, San Francisco 6, Oxnard 1.

Scarlet Fever

88 cases: Berkeley 1, Oakland 1, Pittsburg 2, Fresno County 4, Selma 1, Kern County 2, Los Angeles County 5, Avalon 1, Compton 1, El Monte 1, Glendale 1, Long Beach 1, Los Angeles 18, Pasadena 4, Pomona 1, San Gabriel 1, Santa Monica 1, Lynwood 1, South Gate 1, Madera County 1, San Rafael 1, Merced County 1, Orange County 3, Santa Ana 5, La Habra 1, Sacramento 1, San Bernardino 1, San Diego 1, San Francisco 6, Daly City 1, Santa Clara County 1, Palo Alto 1, San Jose 1, Sonoma County 1, Stanislaus County 7, Tulare County 3, Ventura County 1, Oxnard 1, Yuba County 1, California 1.*

Smallpox

3 cases: Monterey County 1, Placer County 1, Yuba County 1.

Typhoid Fever

2 cases: Beaumont 1, Stanislaus County 1.

Whooping Cough

119 cases: Oakland 1, Fresno 3, Kern County 1, Bakersfield 2, Los Angeles County 22, Burbank 1, Long Beach 9, Los Angeles 11, Pasadena 2, Pomona 1, Redondo 1, Orange County 1, Fullerton 6, Orange 8, Laguna Beach 3, Riverside County 7, Banning 2, Beaumont 1, Sacramento 3, Redlands 3, San Bernardino 1, San Diego County 2, La Mesa 3, San Diego 9, San Francisco 3, Redwood City 1, Santa Barbara 6, Sonoma County 2, Stanislaus County 1, Tulare County 2, Yuba County 1.

Dysentery (Amoebic)

3 cases: Fresno County 1, Indio 1, San Bernardino County 1.

Dysentery (Bacillary)

23 cases: Fresno County 1, Fresno 1, Los Angeles County 5, Los Angeles 5, Placer County 1, Sacramento 1, San Joaquin County 1, Redding 2, Mount Shasta City 1, Sonoma County 4, Yolo County 1.

Pellagra

2 cases: Kings County 1, Los Angeles County 1.

Poliomyelitis

58 cases: Berkeley 1, Oakland 5, Kings County 1, Los Angeles County 8, Azusa 1, Beverly Hills 1, Hermosa 3, Long Beach 1, Los Angeles 12, Pasadena 2, Santa Monica 1, Whittier 1, Bell 1, Monterey County 2, Riverside County 1, Perris 1, Sacramento County 2, San Francisco 4, San Joaquin County 1, Santa Barbara County 1, Santa Maria 1, Benicia 2, Sonoma County 1, Santa Rosa 1, Modesto 1, Porterville 1, California 1.*

Tetanus

5 cases: Los Angeles County 1, Los Angeles 2, Marin County 1, San Bernardino County 1.

Encephalitis (epidemic)

5 cases: Sanger 1, Madera County 1, Merced County 2, Sutter County 1.

Trachoma

One case: San Fernando.

Paratyphoid Fever

One case: Santa Monica.

Trichinosis

2 cases: Oakland.

Food Poisoning

58 cases: Oakland 1, Los Angeles County 1, Santa Ana 3, San Francisco 46, Ventura County 7.

Undulant Fever

7 cases: Oakland 1, Humboldt County 1, Los Angeles County 1, Compton 1, Lynwood 1, Stanislaus County 1, Tulare 1.

Coccidioidal Granuloma

One case: San Bernardino.

Septic Sore Throat

One case: Marin County.

Rabies (Animal)

8 cases: Calexico 1, El Centro 1, Arcadia 2, Los Angeles 2, Merced County 1, Oakdale 1.

* Cases charged to "California" represent patients ill before entering the state or those who contracted their illness traveling about the state throughout the incubation period of the disease. These cases are not chargeable to any one locality.

SHELLFISH QUARANTINE ENDS

The order issued by the California Board of Public Health May 31, 1939, establishing the quarantine of all mussels along the ocean shore of California, extending from the southern boundary of Los Angeles county north to the California-Oregon boundary, with the exception of the Bay of San Francisco; and the order issued June 27, 1939, establishing the quarantine of all clams and oysters from the ocean shore of Monterey and Santa Cruz counties were rescinded September 30, 1939.

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